LISTING OF CLAIMS

1. (currently amended)A speaker device for emitting subsonic, sonic or ultrasonic compression waves, said device being comprised of:

a rigid emitter plate having an outer face oriented outward and an inner face, said emitter plate having a plurality of apertures extending between the outer and inner faces;

a thin piezoelectric film disposed across the apertures of the emitter plate, wherein the thin piezoelectric film is configured to be distended into an arcuate emitter configuration at each of the plurality of apertures~~emitters~~;

electrical contact means coupled to the piezoelectric film for providing an applied electrical input; and

pressure means coupled to the emitter plate for developing a biasing pressure with respect to the thin film at the apertures to distend the film at each of the plurality of apertures into an arcuate emitter configuration capable of constricting and extending in response to variations in the applied electrical input at the piezoelectric film to thereby create a compression wave in a surrounding environment.

2. (previously presented) The speaker device as in claim 1 further comprising a thin polymer coating on the piezoelectric film, wherein the thin polymer coating seals the piezoelectric film and prevents pressure leakage.

3. (previously presented) The speaker device as in claim 2 wherein the thin polymer coating is polyvinylidelene chloride.

4. (previously presented) The speaker device as in claim 1 further comprising a heavy inert gas in the pressure means, wherein the heavy inert gas reduces gas leakage through the piezoelectric film.

5. (previously presented) The speaker device as in claim 4 wherein the heavy inert gas is nitrogen.

6. (previously presented) The speaker device as in claim 1 wherein the apertures have a center and the apertures are spaced apart 1/4 to 1/2 of a wavelength of a selected frequency from aperture center to aperture center.

7. (previously presented) The speaker device as in claim 1 wherein the rigid emitter plate is convex to disperse wave output.

8. (previously presented) The speaker device as in claim 1 wherein the rigid emitter plate is concave to focus wave output.

9. (previously presented) The speaker device as in claim 1 wherein the apertures are between 0.050 and 0.600 inches in diameter.

10. (previously presented) The speaker device as in claim 1 wherein the biasing pressure in the pressure means is between approximately 0 and 20 pounds per square inch.

11. (previously presented) The speaker device as in claim 1 further comprising a pressure seal around a perimeter of the piezoelectric film, wherein the pressure seal is used as the electrical contact means to drive the piezoelectric film.

12. (previously presented) The speaker device as in claim 1 wherein the piezoelectric film thickness is approximately 9 microns, aperture diameter is approximately 0.160 inches, and the biasing pressure is approximately 5 pounds per square inch, wherein a resonant frequency of approximately 35 kHz is produced.

13. (previously presented) The speaker device as in claim 1 wherein the piezoelectric film thickness is approximately 12 microns, aperture diameter is approximately 0.168 inches, and the biasing pressure is approximately 6 pounds per square inch, wherein a resonant frequency of approximately 35 kHz is produced.

14. (previously presented) The speaker device as in claim 1 wherein the piezoelectric film thickness is less than 25 microns, aperture diameter is less than 0.200 inches and the biasing pressure is less than 12 pounds per square inch, wherein a resonant frequency of approximately 35 kHz to 60 kHz is produced.

15. (previously presented) The speaker device as in claim 1 further comprising a clamping member to clamp the piezoelectric film to the rigid emitter plate, wherein the clamping member has a plurality of clamping apertures which correspond to the plurality of apertures in the emitter face.

16. (previously presented) The speaker device as in claim 1 further comprising a generally hollow drum having a sidewall and a first and second opposing means, wherein the rigid emitter plate is attached to the first end of the drum and the inner face is disposed toward an interior cavity of the drum.

17. (previously presented) The speaker device as in claim 16 wherein the pressure means is coupled to the drum for developing a positive biasing pressure with respect to the thin film at the apertures.

18. (previously presented) The speaker device as in claim 1, further comprising:

an ultrasonic frequency generating means for supplying an ultrasonic signal to the piezoelectric film;

a sonic frequency generating means for supplying a sonic signal which is to be modulated onto the ultrasonic signal;

modulating means coupled to the ultrasonic frequency generating means and the sonic frequency generating means to develop an ultrasonic carrier wave with modulated sonic wave; and

transmission means coupled to the modulating means for supplying the carrier wave and modulated sonic wave to the piezoelectric film for stimulating generation of corresponding compression waves at the emitter plate.

Claims 19-40 (canceled)

41. (currently amended)A speaker device for emitting subsonic, sonic or ultrasonic compression waves, said device being comprised of:

a rigid emitter plate having an outer face oriented outward and an inner face, said emitter plate having a plurality of apertures extending between the outer and inner faces;

a thin piezoelectric film disposed across the apertures of the emitter plate, wherein the thin piezoelectric film is configured to be distended into an arcuate emitter configuration at each of the plurality of apertures~~emitters~~;

electrical contact means coupled to the piezoelectric film for providing an applied electrical input; and

pressure means coupled to the rigid emitter plate for developing a positive biasing pressure with respect to the thin film at the apertures to distend the film at each of the plurality of apertures into an arcuate emitter configuration capable of constricting and extending in response to variations in the applied electrical input at the piezoelectric film to thereby create a compression wave in a surrounding environment.

42. (previously presented) A speaker device as in claim 41 wherein the thin piezoelectric film is disposed on the inner face, under the apertures of the emitter plate.

43. (previously presented) The speaker device as in claim 41 further comprising a thin polymer coating on the piezoelectric film, wherein the thin polymer coating seals the piezoelectric film and prevents pressure leakage.

44. (previously presented) The speaker device as in claim 43 wherein the thin polymer coating is polyvinylidelene chloride (PVDC).

45. (previously presented) The speaker device as in claim 41 further comprising a heavy inert gas in the pressure means, wherein the heavy inert gas reduces gas leakage through the piezoelectric film.

46. (previously presented) The speaker device as in claim 45 wherein the heavy inert gas is nitrogen.

47. (previously presented) The speaker device as in claim 41 wherein the apertures have a center and the apertures are spaced apart 1/4 to 1/2 of a wavelength of a selected frequency from aperture center to aperture center.

48. (previously presented) The speaker device as in claim 41 wherein the rigid emitter plate is convex to disperse wave output.

49. (previously presented) The speaker device as in claim 41 wherein the rigid emitter plate is concave to focus wave output.

50. (previously presented) The speaker device as in claim 41 wherein the apertures are between 0.050 and 0.600 inches in diameter.

51. (previously presented) The speaker device as in claim 41 wherein the positive biasing pressure in the pressure means is between approximately 0 and 20 pounds per square inch.

52. (previously presented) The speaker device as in claim 41 wherein the piezoelectric film thickness is approximately 9 microns, aperture diameter is approximately 0.160 inches, and the positive biasing pressure is approximately 5 pounds per square inch, wherein a resonant frequency of approximately 35 kHz is produced.

53. (previously presented) The speaker device as in claim 41 wherein the piezoelectric film thickness is approximately 12 microns, aperture diameter is approximately 0.168 inches, and the positive biasing pressure is approximately 6 pounds per square inch, wherein a resonant frequency of approximately 35 kHz is produced.

54. (previously presented) The speaker device as in claim 41 wherein the piezoelectric film thickness is less than 25 microns, aperture diameter is less than 0.600 inches and the biasing pressure is less than 12 pounds per square inch, wherein a resonant frequency of approximately 35 kHz to 60 kHz is produced.

55. (previously presented) The speaker device as in claim 41 further comprising a clamping member to clamp the piezoelectric film to the rigid emitter plate, wherein the clamping member has a plurality of clamping apertures which correspond to the plurality of apertures in the emitter face.

56. (previously presented) A speaker device as in claim 41 further comprising a wave reinforcement structure disposed inside the interior cavity of the drum, and spaced a distance from the piezoelectric film to enhance a selected frequency.

57. (previously presented) The speaker device as in claim 56 wherein the wave reinforcement structure is disposed at the second opposing end of the drum.

58. (previously presented) The speaker device as in claim 56 wherein the wave reinforcement structure is a distance from the piezoelectric film selected from the group of distances consisting of 1/4, 1/2 and 1 wavelength of the selected frequency from the piezoelectric film.

59. (previously presented) The speaker device as in claim 56 wherein the wave reinforcement structure is a distance from the piezoelectric film selected from the group of distances consisting of 1/4, 1/2 and 1 wavelength of the carrier frequency from the piezoelectric film.

60. (previously presented) The speaker device as in claim 56 wherein the wave reinforcement structure is 1/4 of a wavelength of the carrier frequency from the piezoelectric film.

61. (previously presented) The speaker device as in claim 56 wherein the wave reinforcement structure is a distance from the piezoelectric film selected from the group of distances consisting of 1/4, 1/2 and 1 wavelength of the resonant frequency from the piezoelectric film.

62. (previously presented) The speaker device as in claim 56 wherein the wave reinforcement structure is 1/4 of a wavelength of the resonant frequency from the piezoelectric film.

63. (previously presented) The speaker device of claim 56 wherein the wave reinforcement structure is curved.

64. (previously presented) The speaker device as in claim 41, further comprising:

an ultrasonic frequency generating means for supplying an ultrasonic signal to the piezoelectric film;

a sonic frequency generating means for supplying a sonic signal which is to be modulated onto the ultrasonic signal;

modulating means coupled to the ultrasonic frequency generating means and the sonic frequency generating means to develop an ultrasonic carrier wave with modulated sonic wave; and

transmission means coupled to the modulating means for supplying the carrier wave and modulated sonic wave to the piezoelectric film for stimulating generation of corresponding compression waves at the emitter plate.

Claims 65-68 (canceled)